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In the Field

The Bulletin of the Field Museum of Natural History

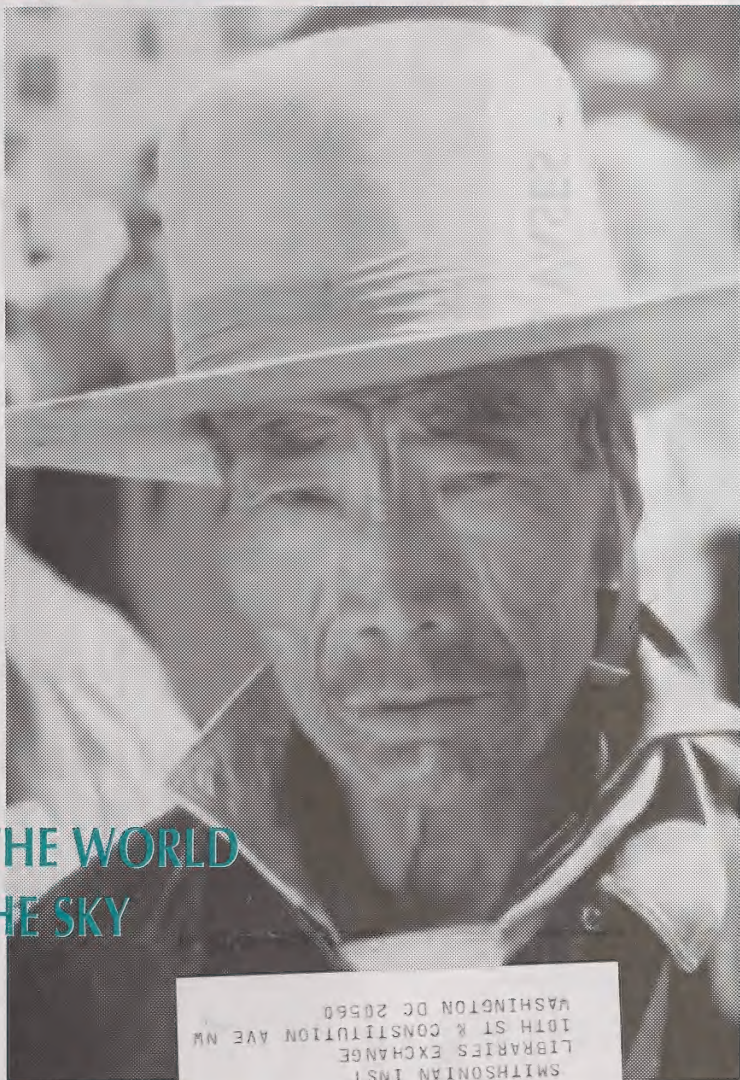
March/April 1992

**THE CAUSES
OF WAR:
AN ARCHAEO-
LOGIST'S
PERSPECTIVE**

**EUROPEAN
TECHNIQUE
IN 18TH-
CENTURY
CHINESE
GLASS**

**NATURE
WORKS:
A MONTH OF
CELEBRATION**

**WHERE THE WORLD
MEETS THE SKY**



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In the Field

The Bulletin of the Field Museum of Natural History

March/April 1992

3

Florence Selko, a Museum volunteer for more than a decade, knows how to get your attention.

5

Exhibit openings: Shoshone and Arapaho powwow dancers; contemporary Tibet and Ladakh.

8

A complete schedule of music, dance, storytelling, and other free programs for Museum visitors

9

Them dry bones are gonna rise again: The dinosaurs are on the move, to a new exhibit aborning.

WESTERN TECHNOLOGY IN QING DYNASTY GLASS

Glass-cutting was one of only a few technologies in which 18th-century Europe was more advanced than China. Another, unfortunately for the Chinese, was weaponry. Two glass vases recently donated to the Museum tell the story.



Story, Page 11

THE CAUSES OF WAR

By Jonathan Haas
Curator of New World Archaeology and
Vice President, Collections & Research

I come to the topic of the anthropology of war from the perspective of an archaeologist. You are forgiven for wondering what an archaeologist could possibly have to say about war — the Trojan War perhaps, but warfare in general? Archaeology deals with ancient people, long dead, broken stones and dusty bones.

There are two faces to archaeology, however, and two different kinds of goals guiding the direction of archaeological research. The first looks at the histories of peoples from the near and distant past. Using artifacts and other material remains of past human behavior, archaeologists attempt to fill in the historical detail of different people, places, and times. This is the traditional realm of archaeology, and what we most often associate with the discipline.

But an alternative goal for archaeology is to go beyond the ancient past and use the archaeological record to help explain patterns of human behavior in the present as well as in the past. It is in this realm of explanation that archaeology can contribute most to our understanding of intercultural and interethnic violence in the modern world.

My own research is on the origins and evolution of warfare among the native people of the southwestern United States in the centuries prior to the arrival of the first Europeans in 1540. This research has produced a specific historical record of the beginnings of warfare in the 13th century A.D. among the Anasazi living in what is now the Four Corners region of Arizona, New Mexico, Colorado, and Utah. "Anasazi" is a term taken from the Navajo language meaning "ancient ones." It is generally used to refer to the prehistoric peoples who built the classic pueblo and cliff dwellings that we so commonly associate with the Southwest.

My colleagues and I have attempted to trace the native patterns of war and peace for the next several hundred years through the period of first contact with early Spanish explorers and the following century of Spanish colonialism. Beyond this historical detail, however, the research offers some insights into the type of warfare we are likely to find in tribal societies in the present as well as the past. Specifically, through the archaeological record, we are able

to gain a new perspective over very long periods of time on the relationship between warfare and the rise of ethnic differences. Archaeology also allows us to see that warfare between different ethnic groups in relatively simple societies is an irregular phenomenon, subject to environmental influences.

I would offer two different insights into warfare drawn from archaeological research. First, ethnic and cultural differences are a necessary and sometimes artificial prerequisite of warfare. What I mean by "artificial" here is that if ethnic differences don't exist before a war, they are sometimes made up to justify a war. Second, the causes of warfare are not to be

found in ethnic differences, but in the economic and demographic conditions at a given time.

Less than Human

During the recent Persian Gulf crisis, a segment of "All Things Considered" on National Public Radio had a discussion of Saddam Hussein's policy of using foreign nationals as "shields" to protect critical facilities. President Bush denounced this tactic

by asserting that even Hitler did not do such a dastardly thing in World War II. Curious as to how common such a practice might have been in the past, the NPR commentator contacted Shelby Foote, the folksy historical consultant on the Civil War miniseries.

Foote commented that indeed the Union had used very similar tactics when they took prominent Southern civilians and placed them on supply trains in an effort to prevent Rebels from attacking the trains. (This effort was futile, it turned out.) The Union forces only took this measure, however, after the Rebels had killed prisoners of war simply because it was too much trouble to keep them. Foote's interpretation of these phenomena is interesting in the present context. He argued that in the heat of war, even between culturally very similar people, once one side committed a perceived inhumane act, the door was open for the other side to respond in an equally inhumane way. Acts of war become justifiable if the opponent is seen as being inhumane and thus somehow less than human.

In the Civil War, where there were no real ethnic differences between the North and the South, difference was created to justify killing.

In the Persian Gulf war, George Bush set the stage for the assault on Iraq by establishing the inhumanity of the Iraqi enemy. So too we see the pattern of cultural differentiation emerge as a precursor to the beginnings of warfare in the prehistoric past.

Looking at the historical trajectory of the Anasazi Indians, the archaeological record shows that the origins of warfare go hand in hand with the evolution of cultural or ethnic differences. Actually the separation of different and distinct ethnic groups starts first, and it is only after it is fully developed that one of the conditions for conflict appears to have been met. The full evolution of ethnic differences takes several hundred years. In the first century A.D., the entire Anasazi region is culturally similar. Everybody basically looks alike, with the same kinds of settlements, similar types of pottery, arrowheads, burials, houses, etc.

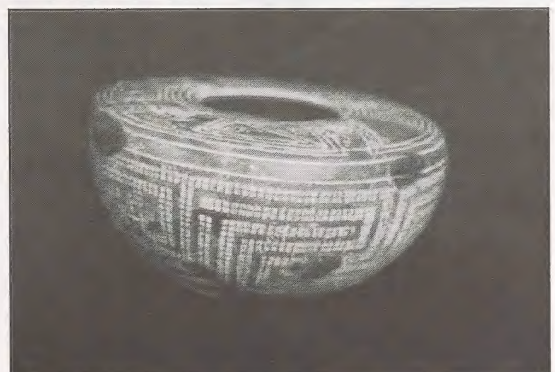
By A.D. 1000 this pattern is in the midst of a transformation, with the emergence of clear regional and subregional differences. Pottery is decorated with different designs, and houses are different from one area to another, for example. Over the course of the next two centuries this pattern continued to develop and quite distinct culture groups appear in the archaeological record. Groups such as the Mesa Verde and Kayenta Anasazi are distinguished by pottery designs, tool types, housing styles, burial practices, religious structures, and rock art. It is centuries after this pattern of culturally distinct groups becomes well established that a pattern of warfare first appears.

(Continued on page 10)

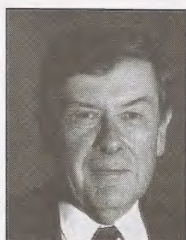
Ethnic and cultural differences are a necessary and sometimes artificial prerequisite of warfare. The causes of warfare are not ethnic differences, however, but economic and demographic conditions at a given moment in time.



The two ceramic vessels shown here illustrate the divergence in style and form that emerged after A.D. 1000 in the Anasazi region. The pot below is a Kayenta black-on-white "seed" jar used for storage, while the vessel at left is a classic Mesa Verde black-on-white mug, used for eating.



VITAL FUNCTIONS



By Willard L. Boyd
President, Field Museum

The Field Museum is a little city in itself, open every day of the year except three. Like any town with lots of traffic, it requires basic services that are provided by a corps of dedicated staff members working largely out of sight. But members of the Museum ought to be aware of how vital these functions are.

Our housekeeping staff, consisting of 33 people, works two shifts to keep the space clean and attractive for visitors of all sorts, whether members of the general public or scholars from around the world. We contract with Service Master, a commercial cleaning firm, to maintain up-to-date training programs to achieve the highest standards of cleanliness. We take great pride in the fact that in any public space one is likely to visit, ours is among the very cleanest.

Along with housekeeping there is the regular paint-up, fix-up that needs to go on in anybody's place of business or home. We have a group of 14 engineers as well as seven painters and carpenters who on a daily basis have to repair leaks, maintain the boilers and air conditioning equipment — and change light bulbs. Indeed, there are some 15,000 to 20,000 light bulbs in the Field Museum.

The Field Museum consists of nearly one million square feet, of which 400,000 square feet is open to the public and 400,000 has limited access because it houses research and collections. Heating and cooling this space is both a

major engineering feat and a major demand on our financial resources. Through a conservation program over the past 15 years, our operations manager, Norman Radtke, has achieved wonders by reducing consumption to hold costs at the 1980 level. For example, when the Northwest Coast Indian Hall and Inuit exhibit was opened in 1981, no special cooling or heating equipment was provided; rather, oscillating ceiling fans draw the air in from other parts of the Museum and thereby cool and heat that exhibit. Special lighting to conserve energy was also installed.

The heart of the Museum is of course its collections, and those collections must be secure. Our security staff of 42 works around the clock to keep the building protected. On the one hand we are obviously providing security from theft — but comparable demand has to be placed on security from fire and water damage.

Then of course there is the question of paying the bills, which are many. This is the responsibility of the finance, accounting, cashier, and payroll departments. It is their responsibility not only to make timely payment but also to apply the funds in the proper legal and business manner to meet the standards of the Internal Revenue Service and the various agencies that monitor our use of funds. The purchasing department has the responsibility

for finding a myriad of goods ranging from lumber, paint, and glass to stainless steel laboratory equipment, at the same time meeting various kinds of government regulations and institutional objectives such as including minority and women's business enterprises.

And if you ever come to a program put on by the Education Department, it is amplified by our audio-visual department, three people who work seven days a week to provide the best in public-programs support for our visitors. Our own print shop, which is now 60 years old, provides most of the stationery, forms, and other printed paper that the Museum, like every large organization, requires.

The Museum staff receives mail from all over the world; it is all handled by three mail-room employees who also mail out thousands of communications each month. Both incoming and outgoing mail often includes scientific specimens of the rarest form.

We are proud of the fact that all of the services which are essential to making this Museum great are carried on without undue notice by the public, which shows how efficiently and effectively these varied staff members serve you, the visitor.

From time to time, *In the Field* will introduce you to some of the men and women who make up the Museum services staff.



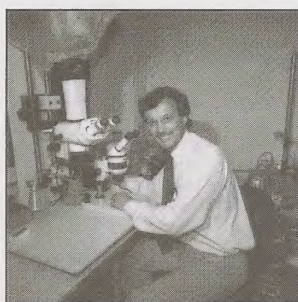
CRANE, INGER NAMED TO MacARTHUR CHAIRS

Two Field Museum scientists have been named to chairs established under a major grant from the John D. and Catherine T. MacArthur Foundation. They will be honored at the annual meeting of the Founders' Council April 8.

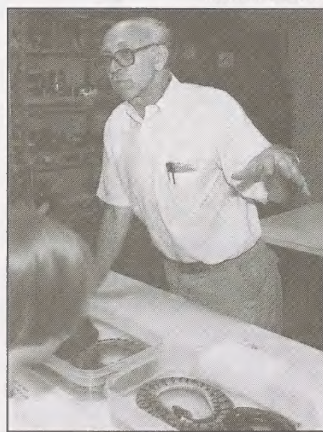
Jonathan Haas, Vice President for Collections and Research, announced the appointments of Peter R. Crane as MacArthur Curator of paleobotany and of Robert F. Inger as MacArthur Curator of amphibians and reptiles. Crane is chairman of the Geology Department, and Inger is past chairman of the Zoology Department.

Peter Crane's recent research has focused on the origins of the flowering plants in the mid-Cretaceous period some 100 million years ago. Robert Inger has been working on the evolution of amphibians and reptiles in Borneo and the effects of logging on those faunal communities.

The Founders' Council is composed of individuals who contribute \$1,500 or more annually or who make other major gifts supporting the Museum as an international center for scientific research and education.



Peter R. Crane in his laboratory, above, and, at left, Robert Inger describing some of his specimens to young visitors during Members Night 1991.



Paul McGrath

NEW CURATOR IN FISHES

Mark Westneat has been appointed assistant curator in the division of fishes, Department of Zoology. His principal research interests are the evolutionary relationships among the 600 species of wrasses, and the "functional morphology" of feeding and swimming in fishes.

The latter study is an effort to document — using high-speed film and video — the mechanisms of force transfer from muscle through connective tissue to skeleton in three families of living fishes. Interpretation of data involves comparative anatomy, theory from mechanical engineering, and new image- and motion-analysis techniques. Westneat also seeks to clarify the patterns of evolution in these functional systems.

Westneat received his Ph.D. from Duke University in 1990.

In the Field

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TOMB ROBBING 101

By Steve Crescenzo

Florence Selko is explaining the mummification process that ancient Egyptians used to preserve their dead to a group of sixth graders from Rockford who all look like they would rather be somewhere else. However, as Selko gets to the part when the brain is pulled out of the skull with a hook — “I know it’s right before lunch . . . sorry,” she apologizes — the children start to perk up. She keeps the momentum rolling, asking the class, “Who thinks they would be a good robber?” A dozen kids raise their hands, and then listen intently as Selko describes how tomb robbers tunneled their way into a pyramid to steal the valuable jewels contained within. Now that she has their attention, she’s ready to start her tour of the “Inside Ancient Egypt” exhibit. So are the kids.

Selko, who will be 71 in April, has been leading tours as an Education Department volunteer for almost eleven years. She works with people of all ages, including college classes and adult tour groups, and over the years has learned to adapt her style of teaching to suit whatever group she is trying to reach. “You have to do different things to different people to get them to open up,” she explains.

Although she is involved in several different programs, ranging from a “Sugar and Spice” program in the botany exhibit to a presentation on the masks of the Northwest Coast Indians, Selko says the Ancient Egypt tour is her favorite — and her forte. “I’ve taken all of Frank Yurco’s classes, and I always go back to him whenever I have any questions.” Yurco is the Museum’s Egyptology consultant.

It’s that in-depth knowledge of her subject matter that makes Selko’s tours special events. Visitors under her care share in the wealth of her knowledge, learning rather than merely looking as she deciphers hieroglyphics and points out the canopic jars that are used to hold the organs of corpses about to be mummified.

Selko first volunteered during the “Gold of El Dorado” and “Great Bronze Age of China” exhibits in 1980s and plans to continue volunteering “as long as I am able to get around.”



Florence Selko leads a group of sixth-graders through the tomb of Unis-Ankh.

“I’m retired,” she explains when asked why she likes to be so involved with the volunteer program, “and life really doesn’t mean all that much if you have nothing to do. Volunteering gives me a real feeling of satisfaction that I am helping people, and besides that, I love Egypt, so it’s fun and interesting for me as well.”

PROGRAM ON FORGERY IN ETHNOGRAPHIC ART

The Collections Committee, the Museum’s newest special-interest support group, meets March 25 for “Facts about Fakes,” a presentation on forgery in ethnographic art by Bennet Bronson, chairman of the Department of Anthropology, with Phillip Lewis, curator of primitive art and Melanesian anthropology.

A reception in the Founders’ Room begins at 5:30 p.m. and the program starts at 6 p.m. For information, call Heidi Bloom at (312) 322-8874.

The Collections Committee, chaired by Mr. and Mrs. James J. Glasser, was organized to increase awareness about the Museum’s unparalleled ethnographic collections and to provide a forum for the exchange of ideas and information on ethnographic collections and collecting.

The group plans to host a variety of educational activities and programs including presentations by Field Museum scholars, behind-the-scenes tours of Field Museum collections, conservation lectures and workshops, and visits to private collections of Chicago-area collectors.

WALKING TOUR OF SWITZERLAND

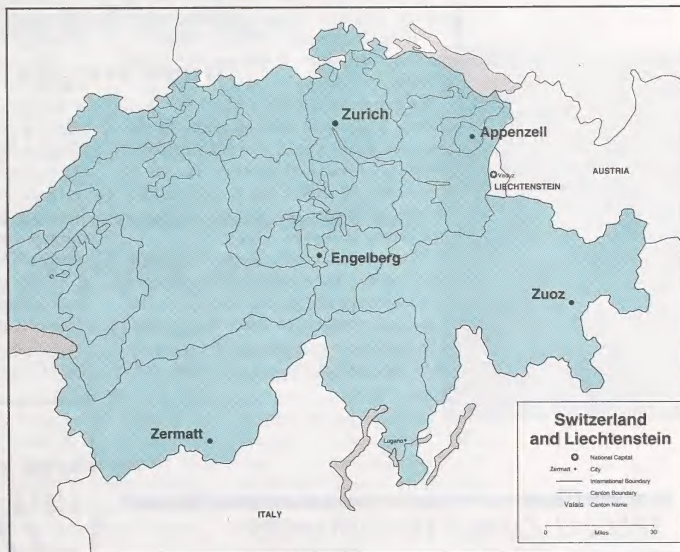
Whether you’re a casual walker or an experienced hiker, there’s something special for you in an unusual Field Museum Walking Tour of Switzerland June 4–17. Escorted by two residents of Engelberg, Jacqueline and Arne Tofte, the daily walks will range from five to ten miles with adequate rest stops. Four locations will be visited including Engelberg, Zermatt, Zuoz, and Appenzell.

Outdoor activities take place at an altitude of more than 4,000 feet, with cable cars or mountain railroads used to reach higher elevations.

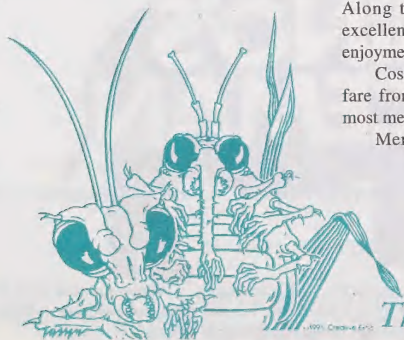
The Toftes have been hosting similar walking tours for the past twelve years, and their extensive knowledge of the lesser-known trails, customs, and specialties of the region promise to make this tour one of the most exciting ever presented to Museum members. Along the way, charming area hotels and excellent local cuisine will add much to the enjoyment of this unusual tour.

Cost of the tour is \$3,475, including airfare from Chicago, all accommodations, and most meals.

Members who are thinking about a Fall



trip might consider the Museum’s three-week tour of Botswana and Zimbabwe, September 17 – October 4. Highlights include the Larvon Bird Garden in Harare, with some 430 species on the wing; Mana Pools National Park on the Zambezi River; Victoria Falls; the Okavango Delta; and Chobe National Park. For more information on this and other Museum tours, call (312) 322-8862.



They're coming . . .

FOREIGN AID FOR FIELD MUSEUM

Two recent visitors to the Museum provided valuable assistance in the development of new exhibits. Below, Cliff Whiting, conservator and chairperson of Te Waka Toi, the Maori and South Pacific Arts Council of Russell, New Zealand, describes to Michael Spock (left), Vice President for Public Programs, work that will need to be done before Ruatēpupuke II, the Museum's Maori meeting house, can be reopened. At right, a reception for Dr. Njoya Njiasse Aboubakar (in white robes), a historian and archaeologist from Cameroon, who spent five weeks in Chicago consulting with the development team for the new Africa exhibit.



Paul McGrath



James Baloginas / ON 06/12/12

SECOND SEASON FOR SCIENCE EXPLORERS PROGRAM

Field Museum will again participate in the Chicago Science Explorers Program, designed to introduce students, particularly minorities, to science as a career possibility.

The program is built around *The New Explorers*, a television series produced by veteran journalist Bill Kurtis, who is a member of the Museum's board of trustees. The show, now in its second season, airs weekly on PBS. It features scientists who are breaking new ground in their respective fields.

Chicago cultural and scientific institutions combine tapes of the shows with specially prepared classroom materials and resources available at each institution to insure that students get the maximum exposure to the scientific field being studied, including contact with

working scientists. Teachers planning to use the program take inservice training at the participating institutions.

The Field Museum is working with three episodes of *The New Explorers*: "The Beauty of the Beast," a look at the research Steven and Marilyn French are doing with grizzly bears; "Fragments of Time," which features Field Museum research associate Paul Sereno and his work in Argentina on the evolution of dinosaurs; and "Rivers of Fire," a look at the volcanoes of Hawaii through the eyes of volcanologist Frank Trusdell.

Other institutions participating in the program include the Adler Planetarium, Argonne National Laboratory, Chicago Academy of Sciences, Chicago Police Department, Brookfield Zoo, Commonwealth Edison Co., Fermilab,

International Museum of Surgical Science, Lincoln Park Zoo, Mexican Fine Arts Museum, Museum of Science and Industry, and Shedd Aquarium.

Joyce Matuszewich, director of the Harris Educational Loan Center at Field Museum, will join three other Chicago educators in presenting the Explorers Program at an American Association of Museums meeting in Washington, D.C.

The Chicago Science Explorers Program is funded by the United States Department of Energy and directed by Alan Schriesheim, director of Argonne National Laboratory. With support from Amoco Corp. and Waste Management, Inc., underwriters of the PBS series, communities throughout the country can use the videos to develop programs patterned on the Chicago model.

SPECIAL OFFER TO MEMBERS

One week only: Celebrate spring and Earth Month with the Field Museum family and our friends in Evanston at the Northlight Theatre. Members of the Field Museum can enjoy great savings on FIELD NIGHTS at Northlight.

Tue. - Thur., 4/21-23 8pm — \$15 (reg. \$21)
Fri., 4/24 8pm — \$19 (reg. \$26)
Sat., 4/25 5pm & 8:45pm — \$19 (reg. \$26)
Sun., 4/26 3pm & 7:30pm — \$15 (reg. \$21)

Charge your tickets by calling Northlight at (708) 869-7278 and identifying yourself as a Field Museum member. Reserve special center seating at these low prices by calling before March 31. This offer is subject to availability. You must present your membership card when picking up tickets.

Northlight is located at 817 Chicago Avenue in Evanston, near the Main Street el and Metra stations. Valet and ample street parking available.

APRIL 21 - 26

FIELD NIGHTS AT



The world premiere of Rick Cleveland's *The Rhino's Policeman*, recipient of a 1991 grant from the Fund for New American Place, a joint project of the John F. Kennedy Center for the Performing Arts and American Express in cooperation with the President's Committee on the Arts and Humanities

A young journalist in Africa discovers the wilderness without . . . and the wilderness within

"Do you see the small bird on his back? . . . It is an oxpecker. He eats flies and ticks. We call him askiri wa kifaru. The rhino's policeman. . . . The rhino has very poor eyesight and the oxpecker helps him to see when there is danger." — Act II

CALENDAR OF EVENTS

SLIP-SLIDIN' AWAY

NEW EXHIBIT ON PLATE TECTONICS

Moving Earth," a new permanent exhibit that explores the theory of plate tectonics, is now open on the Museum's second floor. Through the use of hands-on, interactive learning tools, visitors can discover how the "plates" that carry the continents and oceans are constantly moving, and how that movement affects the world we live in.

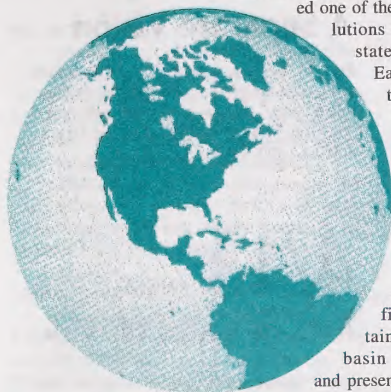
The theory of plate tectonics, which created one of the most profound revolutions in scientific history, states that heat from the Earth's interior propels the surface "plates" into constant motion. These movements have played a key role in all phases of the Earth's history, including development of the atmosphere, the evolution and diversification of life, mountain building and ocean basin formation, and past and present earthquake and volcano activity.

Plate tectonics also affects global climate. Plate movements over the past 50 million years changed sea levels and oceanic and atmospher-

ic circulation, ultimately resulting in the formation of polar ice caps and recurrent "ice ages." These changes take on special meaning with current concerns about global warming and the Greenhouse Effect.

Visitors to "Moving Earth" will get an up-close view of how plate tectonics works as they walk into a cutaway six-foot globe and experience first-hand the Earth's layers and the convection of heat from the core to the surface. They will also be able to touch the layers of the earth in a three-foot cross-section of a globe, and see how plates actually move on the earth's surface by sliding around the plates on a small interactive globe. The exhibit also includes an animated video that traces the history of plate movements for the past 600 million years.

Later components of "Moving Earth" will be devoted to "Earth Processes" and "Global Climate." The exhibit is located at the north end of the second floor, where it will eventually be joined by a major new exhibit titled "Life Over Time" that will explore the evolution of life on earth.



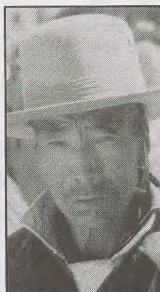
FIELD MUSEUM
THE SMART WAY TO HAVE FUN.

WHERE THE WORLD MEETS THE SKY

More than 40 color photographs exploring the beautiful scenery and diverse people of contemporary Tibet and Ladakh will be on display in the South Gallery from March 28 to May 17.

"Where the World Meets the Sky: Photographs of Ladakh and Tibet" by Ellen Kaplowitz includes intimate portraits of the region's inhabitants, among them Tibetan Buddhist monks and Moslems, and landscape shots of the magnificent mountainous regions of Ladakh in northern India and Lhasa in Tibet.

Kaplowitz has been roaming the world for the past 15 years, capturing diverse cultures and exotic lands on film before they are lost to modernization. Other projects have included a film, *Kaleidoscope Papua New Guinea* and current photography in Borneo and Indonesia.



NatureWorks

SATURDAYS IN MARCH

A DYNAMIC SERIES OF EARTH AWARENESS PROGRAMS

POWWOW

"Powwow," an exhibit of stunning color photographs of Arapaho and Shoshone powwow dancers, will be on display in the Webber Gallery from April 18 to August 23, 1992.

New York photographer Elijah Cobb spent five summers capturing the dancers on film at their home on the Wind River Reservation in Wyoming.

The 30-by-40-inch photographs, which range in style from realistic to abstract, capture the increasing energy and emotion of the dancers. Clear, stop-action images and conceptual, whirling masses of light convey the escalating intensity and passion of the powwow as the night grows later.



From the people who brought you "E.T." . . .

Coming to the
FIELD MUSEUM OF NATURAL HISTORY

May 30 - September 7, 1992

Members will receive a discount on tickets and priority admission to this spectacular exhibit on the little beasts that are . . .

Watch for details in future issues of
In the Field



3/1 Sunday Performance

Lite Henry Huff presents original compositions on the baliphone, barimbau, hunter's horn, and a variety of flutes. Performance at 1 p.m.



James B. Gorman (312) 322-1114

3/2 Wednesday Facts about fakes

The Collections Committee hears about forgery in ethnographic art from anthropology curators Bennet Bronson and Phillip Lewis. Reception at 5:30, program at 6 p.m. in the Founders' Room. Call (312) 322-8874.

3/11 Wednesday Windy City Grotto

The Chicago chapter of the National Speleological Society meets at 7:30 p.m. Slide shows of recent caving trips by members will be shown. The Grotto meets the second Wednesday of each month. Call (708) 524-1215.

3/28-3/31 A Separate Vision

Brenda Spencer, one of the Native American artists featured in the exhibit "A Separate Vision," demonstrates contemporary weaving. Four programs daily, at 10 a.m. and 1, 2 and 4 p.m.



3/8 Sunday Exhibit closing

Last chance to see "In the Land of Green Lightning: Wildlife of the Mayan Realm." Photographs by Thor Janson of contemporary life in the lands of the ancient Maya. In the South Gallery.

3/9 Monday Arts of Sumba

The Primitive Art Society presents Douglas Dawson in a slide-lecture on his recent Indonesian trip, focusing on Sumba. Call (312) 738-4002.

3/9 Monday Camera Club

A slide-lecture titled "Local Wilderness," by Glen Jahnke, focuses on nature photography in the Chicago area. 7:45 p.m.; enter at the West Door. All are welcome.

3/14 Saturday Green and Growing

"An Urban Gardening Fair": Workshops and demonstrations for city gardeners. \$5 registration includes all sessions and a copy of *Gardening Resource Guide*. Call (312) 201-1074. A gardening expo in Stanley Field Hall featuring 35 exhibitors is free with regular Museum admission and continues through Sunday.

3/14 Saturday Family Overnight

Bring the kids (grades 1-6) and sleep over at the Field Museum. Natural science workshops, flashlight tours, entertainment, an evening snack, and Continental breakfast Sunday morning. \$30 per adult, \$25 per child. Call (312) 322-8854.

3/23 Monday Systematics of Snakes

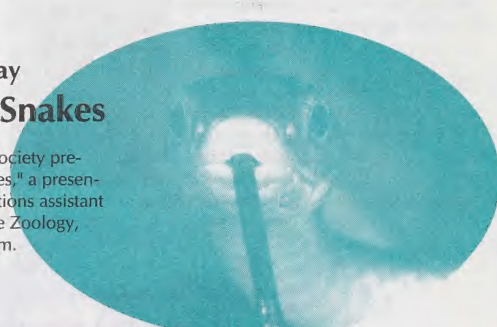
The Chicago Herpetological Society presents "Higher Systems of Snakes," a presentation by Van Wallach, collections assistant at the Museum of Comparative Zoology, Harvard University, at 7:30 p.m.

4/13 Monday Arts of Çatal Hüyük

The Primitive Art Society presents a slide-lecture on the art and artifacts of Çatal Hüyük, a 7000 B.C. village in Turkey, by Ann Murray, former assistant director of the British Institute of Archaeology in Ankara. 7:30 p.m.; use West Entrance. Call (312) 738-4002.

4/13 Monday Camera Club

The winter photography competition will be judged at this month's meeting, with a panel of three judges doing the scoring. 7:45 p.m. in Lecture Hall 2; entry is from the West Door. All are welcome.



3/28 Saturday Exhibit opening

"Where the World Meets the Sky," photographs of contemporary Tibet and Ladakh by Ellen Kaplowitz. Through May 17 in the South Gallery.

4/18 Saturday Exhibit opening

"Powwow," photographs of Shoshone and Arapaho powwow dancers by Elijah Cobb. Through May 23 in the Webber Gallery.

'NATUREWORKS' IN MARCH

NatureWorks," a month-long celebration of the earth, offers visitors of all ages a variety of entertaining earth-awareness programs. Each Saturday in March, NatureWorks will feature performances, family activities, and the chance to meet members of the Museum's scientific staff who travel the world researching diverse ecosystems. Similar programs for school groups will be offered on Wednesdays. Each day, several Field Museum curators and scientific support staff will be on hand and informal hall activities will explore natural history topics. A detailed schedule appears on the "Visitor Programs" page (overleaf). Highlights include:

March 7

- Marilyn Price entertains visitors with her "Puppets in the Wild" performance. She will tell tales from around the world using puppets made up of wild combinations of recycled materials. Afterwards, Price will show families how to make their own recycled puppets.

- William Stanley, collection manager for the Zoology Department's division of mammals, demonstrates how animal specimens are prepared for scientific study.

March 14

- Travel back in time to the 1700s to meet Carl Linnaeus, who developed the system of classifying and naming plants and animals that scientists still use today. An actor portraying Linnaeus visits guests in the new "Into the Wild" exhibit.

- Field Museum staff on deck include William Burger, curator of botany, talking about plant collecting in Central America, and Zorica Dabich, a scientific illustrator, demonstrating techniques for drawing plants.

March 21

- "A Journey with John James Audubon,"

GREEN AND GROWING

"Green and Growing . . . An Urban Gardening Fair," a day-long exposition **Saturday, March 14**, is co-sponsored by the Chicago Botanic Garden, Chicago Park District, City of Chicago, Field Museum, Open Lands Project, and the University of Illinois Cooperative Extension. This program features speakers on community gardening, sessions on a variety of urban gardening topics, and an assortment of exhibitors and display garden plots. Registration for the program is \$5, but the exhibits and displays are free with Museum admission and continue through Sunday. Call (312) 201-1074 for information.



Green and Growing...
an urban gardening fair

a one-person humorous play about America's foremost nature artist.

- Fiber artist Betsy Mitten demonstrates how natural dyes have been used in different cultures and how to tackle some easy dye projects in your own home.

- Jeannette Briggs, technical assistant in the Museum's biochemistry labs, explains how DNA analysis is used in research.

March 28

- Phyllis Nelson illustrates the stages of papermaking and explains how to recycle materials to make your own paper.

- Janet Voight, assistant curator of zoology, discusses the fascinating octopuses and squids of the eastern Pacific Ocean.

- Mark Westneat, assistant curator of zoology, talks about biomechanics of fishes.

COURSES ON EGYPT FEATURED



The Museum's Department of Education is offering a variety of educational programs for adults and families this spring. A series of courses on the culture of ancient Egypt is one of the highlights of the adult and family program schedule. Egyptologist Frank Yurco is the instructor. Pre-registration is required. Call (312) 322-8854 for a brochure and registration information. The next issue of *Field Guide*, the department's program bulletin, will be available April 1.

Ancient Egyptian Literature
Mondays, March 9 – April 13
7 p.m. – 9 p.m. (Six Nights)
\$65 (\$55 members)

Ancient Egyptians developed an extensive body of literature including many forms still used today. Trace the development of the short story, biography, poetry, and religious myth while reading and analyzing examples from several historical periods.

Egypt: The Middle Kingdom
Wednesdays, March 11 – April 15
7 p.m. – 9 p.m. (Six Nights)
\$65 (\$55 members)

The Middle Kingdom is the second period of high cultural development in ancient Egypt. Study the political scene, Egypt's expansion into Nubia, the funerary beliefs of the Osiris cult, and the high artistic achievements of the period.

Egyptian Hieroglyphs: Intermediate Level
Thursdays, March 19 – April 23
7 p.m. – 9 p.m. (Six Nights)
\$65 (\$55 members)

Continuing Egyptian hieroglyphic grammar from Beginning Hieroglyphs, this class will focus on the Egyptian verbal system. Texts will be assigned to illustrate and reinforce class discussion. Participants will develop their skills in reading full Egyptian texts.

EARTH, SEA & SKY SUMMER CAMP

Kids can explore the universe this summer without ever leaving Chicago! For the first time ever, the Field Museum, Shedd Aquarium, and Adler Planetarium have joined forces to offer a fun-filled, educational day camp for young people from kindergarten through twelfth grade. As part of the "Summer Worlds Tour," children can dis-

cover the solar system, meet aquatic and marine animals from around the world and explore the wonders of the natural sciences. Participants will spend one day at Adler Planetarium and two days each at the Field Museum and Shedd Aquarium, and different programs have been set up for three age groups. The first session begins July 13; call (312) 322-8854.

Become a Member

of the Field Museum of Natural History and receive these benefits:

- Free admission
- Free coat checking and strollers
- Invitation to Members' Night
- Priority invitations to special exhibits
- Free subscription to *In the Field*
- 13-month wall calendar featuring exhibit photographs
- Reduced subscription prices on selected magazines
- Opportunity to receive the Museum's annual report
- 10% discount at all Museum stores
- Use of our 250,000-volume natural history library
- Discount on classes, field trips, and seminars for adults and children
- Members-only tour program
- Opportunity to attend the annual children's Holiday Tea
- Discount at Chicago's largest furniture wholesaler
- Children's "dinosaur" birthday card

MEMBERSHIP APPLICATION

New Members only. This is not a renewal form.

- ☐ Please enroll me as a Member of the Field Museum of Natural History

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

GIFT APPLICATION FOR

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

GIFT FROM

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

MEMBERSHIP CATEGORIES

- ☐ Individual – one year \$35 / two years \$65
- ☐ Family – one year \$45 / two years \$85 (Includes two adults, children and grandchildren 18 and under.)
- ☐ Student/Senior – one year \$25 (Individual only. Copy of I.D. required.)
- ☐ Field Contributor – \$100 - \$249
- ☐ Field Adventurer – \$250 - \$499
- ☐ Field Naturalist – \$500 - \$999
- ☐ Field Explorer – \$1,000 - \$1,499

All benefits of a family membership — and more

- ☐ Founders' Council – \$1,500
Call (312) 322-8878 for more information.

VISITOR PROGRAMS

NatureWorks : Every Wednesday and Saturday in March, a series of earth awareness programs is offered. Meet Field Museum scientific staff and take part in a variety of public programs to learn more about global conservation and the wonders of nature.

Sunday, March 1

1pm Lite Henry Huff performs original compositions on the baliphone, barimbau, hunter's horn and a variety of flutes.

Wednesday, March 4

10:30am "Save the Cranes" performance by Bob Kann. A unique collection of stories about crane preservation & what you can do to help cranes survive & multiply.

10:30am - 1pm Meet Field Museum Scientists & Staff: Mammal Specimen Preparation with Bill Kephart; and Field Museum's Library with Michele Calhoun.

Saturday, March 7

11am & 2pm "Wild Puppets" performance & workshop by Marilyn Price. Stories from around the world will be told using puppets made of recycled materials. Families are encouraged to bring a plastic soda bottle, plastic milk jug or some type of food box to make their own wild puppets.

11am - 3pm Meet Field Museum Scientists & Staff: Mammal Specimen Preparation with William Stanley, Collection Manager, Division of Mammals; Field Museum's Library with Michael Trombley.

Sunday, March 8

1pm Mwata Bowden presents his entertaining "Winds & Thangs".

2pm Around the Field Tour - Dinosaurs, totem poles and more will be visited during this highlight tour of museum exhibits.

Wednesday, March 11

10:30am "Use It Again" A fast-paced play about recycling and the environment by Gaia Theater.

10:30am - 1pm Meet Field Museum Scientists & Staff: Economic Botany with Nancy Alaks, Collection Manager, and Sharon Kramer, Volunteer, Botany Department.

Thursday, March 12

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, March 14

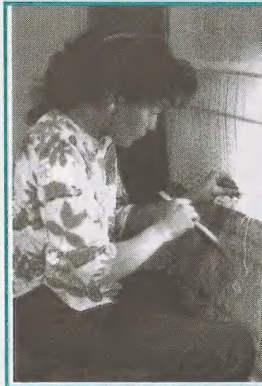
9am - 4pm Green

and Growing...An Urban Gardening Fair The garden expo in Stanley Field Hall features exhibits and demonstration gardens.

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

11am - 2pm "A Visit with Carl Linnaeus" in the Into the Wild: Animals, Trails & Tales exhibit. Step back in time to the 1700's and meet Carl Linnaeus, famous for developing a system of classifying and naming plants and animals which we still use today.

11am - 3pm Meet Field Museum Scientists & Staff: Plant Collecting in Central America with William Burger, Curator of Botany; Botanical Illustration with Zorica Dabich, Scientific Illustrator; Economic Botany with Sharon Kramer, Volunteer, Department of Botany; and Field Museum's Library with Joel



Caithamer.

Sunday, March 15

1 - 4pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

1pm Musa Mosley demonstrates the art of African drumming and drum making.

Wednesday, March 18

10:30am "A.W.A.R.E." A performance by Trinity Square Ensemble discusses how three different threatened and endangered species live in their natural habitats: how they move, what they eat, how they survive.

10:30am - 1pm Meet Field Museum Scientists & Staff: Birds of Middle American Cloud Forests with Town Peterson, Researcher, Division of Mammals; and DNA Testing with Jeannette Briggs, Technical Assistant, biochemistry lab.

Thursday, March 19

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, March 21

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

11am & 2pm "A Journey with John James Audubon" Come "face-to-face" with America's foremost natural artist in this one-person-play by Face to Face Productions.

11am - 3pm Nature's Colors with Fiber Artist Betsy Mitten. Discover how natural dyes have been used in many cultures and learn how to make some easy dye projects at home during this family activity.

11am - 3pm Meet Field Museum Scientists & Staff: Insect and Arachnid Explorations with Margaret Thayer and Petra Siewald, Research Associates, Department of Zoology; DNA Testing with Jeannette Briggs, Technical Assistant, biochemistry lab; and Field Museum's Library with Sarah Bridger.

Sunday, March 22

1am - 4pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

1pm The Chinese Music Society of North America demonstrates instruments of the Chinese orchestra.

1pm Around the Field in German
3pm Around the Field in French - Dinosaurs, totem poles and more will be visited during these highlight tours for German- and French-speaking visitors.

Wednesday, March 25

10:30am "Use It Again" A fast-paced play about recycling and the environment by Gaia Theater.

10:30am - 1pm Meet Field Museum Scientists & Staff: Fish Skeleton Preparation with Mary Ann Rogers, Collection Manager, Division of Fishes; and Goliath Frog Preparation with Sophie Brunner, Volunteer, Division of Reptiles & Amphibians.

Saturday, March 28 through Tuesday, March 31

10am - 1pm & 2 - 4pm

Weaving demonstration by Brenda Spencer, contemporary Navajo weaver featured in "A Separate Vision" exhibit. Demonstration is sponsored by Oscar Isberran Rugs, Evanston, Ill.

Thursday, March 26

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, March 28

11am - 2pm "A Visit with Carl Linnaeus" in the Into the Wild: Animals, Trails & Tales exhibit. Step back in time to the 1700's and meet Carl Linnaeus, famous for developing a system of classifying and naming plants and animals which we still use today.

11am - 3pm Meet Field Museum Scientists & Staff: What Is Biomechanics? with Mark Westneat, Assistant Curator, Division of Fishes; Octopuses & Squids with Janet Voight, Assistant Curator, Division of Invertebrates; Field Museum's Library with Janeen Devine; and Mammal Specimen Preparation with Bill Kephart.

1:30pm Tibet Today & Bhutan, Land of the Thunder Dragon. A slide presentation which takes you to Lhasa and other places now open to tourists in Tibet. A visit to the small Himalayan country of Bhutan will also be presented.

1pm Join Raices Del Andes for a performance of folk music from Bolivia and South America.

Saturday, April 4

1pm Jazz vocals with Rita Warford.

Sunday, April 5

1pm Venico De Toledo demonstrates Afro-Brazilian percussions & rhythms.

Thursday, April 9

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, April 11

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

1pm Vandy Harris highlights African American music through voice, sax, flute and trumpet.

Sunday, April 12

1 - 4pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

1pm Around the Field in German

3pm Around the Field in French - Dinosaurs, totem poles and more will be visited during these highlight tours for German- and French-speaking visitors.

3pm The classical sound of the zheng, the Chinese zither, as presented by Fan Wei-Tsu.

Thursday, April 16

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, April 18

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

1pm Carlos Cumpian shares his poems and stories of Chicano/Mexican culture.

Sunday, April 19

1 - 4 pm Weaving Designs in Cloth: a

demonstration by the North Shore Weaver's Guild.

1 pm Chinese Music Society of North America performs instruments of the Chinese orchestra.

Thursday, April 23

10am - 1pm Weaving Designs in Cloth: a demonstration by the North Shore Weaver's Guild.

Saturday, April 25

1pm A performance of Indonesian Dance courtesy of the Indonesian Consulate of Chicago.

Sunday, April 26

1pm The Thai Classical Dance Company performs.

Celebrate National Volunteer Week

(April 26 - May 2) — Become A Field Museum Volunteer For more information about how you can get involved, contact the Museum Volunteer Coordinator, 312/922-9410, extension 360.

Webber Resource Center

Native Cultures of the Americas

Books, videotapes, activity boxes, tribal newspapers, and resources for educators about native peoples of the Americas are available.



Marilyn Price and friend in "Wild Puppets," March 7.

Daily 10am - 4:30pm

Harris Education Center

Chicago Area educators may borrow activity boxes and small dioramas from the Harris Educational Loan Center. Open House Hours: Tuesdays & Thursdays 2:30 - 5pm Saturdays 9am - 5pm

Place For Wonder

A special room of touchable objects where you can discover daily life in Mexico, in addition to an array of fossils, shells, rocks, plants and live insects. Weekdays: 12:30pm - 4:30pm Weekends: 10am - 4:30pm

Pawnee Earth Lodge

Walk into a traditional home of the Pawnee Indians of the Great Plains and learn about their daily life during the mid-19th century. Free program tickets available from the South Information desk in Stanley Field Hall. Weekdays: 1pm program Saturdays: 10am - 4:30pm; free ticketed programs at 11, 12, 2 & 3. Sundays: 10am - 4:30pm

Backyard Monsters

Volunteers are being sought to staff activity carts featuring live bugs and related activities on weekdays and weekends May 30 - September 7. For more information, contact the Museum Volunteer Coordinator, 312/922-9410, extension 360.



Gaia Theater performers "Use It Again" on March 11 and 25.

ON THE MOVE AGAIN

For the first time in a very long time, the dinosaurs — at least the six whose skeletons are in the Field Museum — are on the move again! To get ready for several new permanent exhibits that will be opening over the next three years, the Museum is busy rearranging not only the dinosaurs but much of its other exhibit space.

Details keep changing (so watch your step), but major changes include:

Closing the south half of the current dinosaur exhibit (from the apatosaur to the coal forest) this past December. The dinosaurs will be incorporated in a new exhibit on evolution, tentatively titled "Life Over Time," that is scheduled to open in the fall of 1994. Meanwhile, there will be a series of temporary dinosaur exhibits on the second floor. There are also plans to renovate and move the Maori meeting house from the ground floor to the space vacated by the apatosaur in the spring of 1993.

In November 1992, "Exploring American Wilderness" will open in the Rice Wing (first floor west) where "Mammals of America" used to be. This part of the animal kingdom exhibits will also include a zoology resource center in Rice Hall where "Mammals of Africa" used to be — right next to the current "Into the Wild" exhibits.

A new multidisciplinary exhibit on Africa, scheduled to open in November 1993, will go into the remaining first floor west space.

On the second floor, "Life Over Time" will be installed in the northeast halls, using two currently empty halls as well as the north half of "Plants of the World." To make room, "Plants of the World" has been combined with the "Useful Plants" exhibit to form a single large botany exhibit in the southeast halls of the second floor.

Another permanent exhibit, "Moving Earth," which explores the theory of plate tectonics, opened recently on the second floor where "Ancient China" used to be.

It all may sound confusing now, and it is, but when the dust clears, Field Museum will be closing out its first one hundred years of operation and opening the doors to a new century of public education.



James Balodimas (GN65923 34)

Beginning with a taxidermist's body form of a giraffe's rib cage and using resins and papier maché, preparator Katheryn Lehar (center) created this 14-foot model for the mega-herbivores section of the Africa exhibit. Working on the paint job with Lehar is Amphay Oudomsouk. Mural painter Rebecca Allen (left) helps complete the illusion.

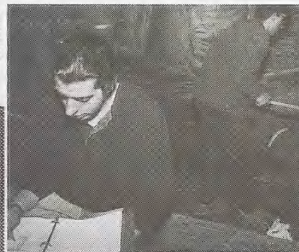


James Balodimas (GN65931 18)

Bill Driscoll (below left) and Scott Smith are shown beginning the deinstallation of the coal forest diorama, which will reappear in "Life Over Time."



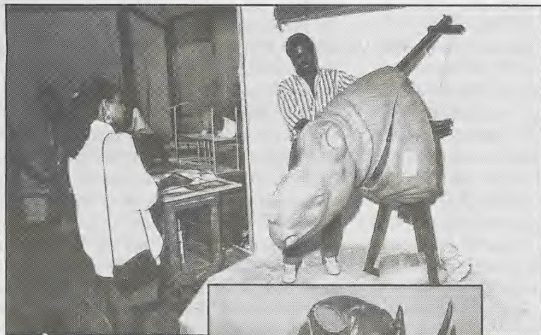
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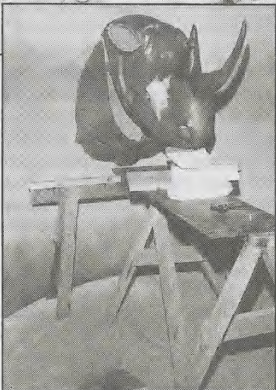
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John Wensink (BIC06637)



Joseph Searcy demonstrates for a visitor how the rhino's head will move when it appears in the Africa exhibit.



James Balodimas (GN6597 12)

Don Jeffrey (right), Gilles Danis (below), and Amy Toscani (below right) were the center of media attention when they began dismantling the skeleton of Apatosaurus for reinstallation in "Life Over Time."



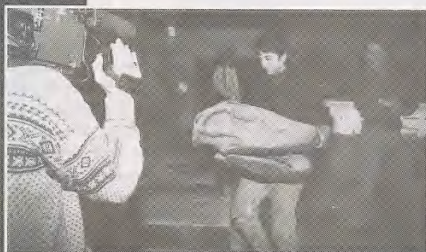
James Balodimas (GN6164 13)



James Balodimas (GN66064 19)



James Balodimas (GN6153 8)



James Balodimas (GN6167 15)

WAR . . .

*(Continued from page 1)***Fifty years of war**

In the middle of the 13th century, the people of the region suffered prolonged environmental stress — cyclical droughts, erosion of arable land, and growing malnutrition. It is only under these circumstances that we see indications of warfare breaking out among the different culture groups of the Anasazi. We find burned houses, wrecked villages, headless skeletons, and skeletonless heads. The people took extraordinary measures to move their homes into protected and highly defensible locations, and defensive communication networks link together all of the villages in a wide region. Although we do not have good evidence of the intensity or frequency of warfare at this time, the archaeological data do provide a record of serious, endemic warfare all across the northern Southwest for a period of about 50 years, after which the entire region was abandoned.

Note that conflict arose only after the development of discrete, culturally different groups. Prior to this cultural differentiation, there are no signs of warfare in the Anasazi heartland for centuries. The various subgroups of the Anasazi, these early ethnic groups, were at peace with one another. They coexisted side by side for more than 200 years with absolutely no signs of conflict between them. It is long after the cultural foundations have been laid for distinguishing “us” from “them” that raiding, killing, and burning appear as a complex

progressively deteriorating environment. We have a detailed environmental record for this region carefully reconstructed from tree rings, geological analysis of soils, and pollen samples. This record of the centuries prior to the onset of conflict shows that beginning about A.D. 1100, the environment began to change from one highly favorable to farming, to one not so favorable. Prior to 1100, there was lots of annual precipitation, most coming in winter snows, no signs of droughts, generally a high water table, and rich, built-up soils. The human remains from this period reflect a population that was relatively healthy, with good nutrition and few diseases related to diet. Population densities were relatively low, with abundant land for the number of people in the region.

After 1100, while the population continued to grow, the precipitation pattern changed, with less overall moisture and a shift to more summer-dominant rainfall. The significance of summer-dominant rainfall in the Southwest is that the water comes in the form of thunder-showers that drop a great deal of rain in a very short period of time. The water then does not soak into the ground, but washes away, carrying soil with it. Erosion, therefore, increases at the same time. So there is not only less annual precipitation, but it is coming in a form that is not as useful to farmers, and it is eroding away their arable land. This pattern then intensified over the next 200 years, and the ancient Anasazi farmers found themselves faced with an increasingly hostile environment at a time of maximum population density in the region. Archaeologically, we see signs of growing malnutrition, declining average age at death, and a significant increase in the deaths of small children and infants.

Us vs. them

It is in response to such severe environmental and demographic stress that warfare first arises among the Anasazi. There were too many people, their crops were failing, their land was being washed away, and their children were dying of malnutrition. Their adaptive strategies, so successful in the past, were no longer adequate to cope with a changed environment. Peaceful relations with neighboring groups, once a source of security in times of occasional stress, no longer could be relied upon. “Us” and “them” together in a world of relative bounty, became “us” versus “them” in a world of stress and shortage.

I should also point out here that residents of this region had faced similar environmental problems in earlier centuries but had not resorted to conflict with their neighbors. The cultural circumstances, however, had changed. Population was greater, and the emerging ethnic differences served as a natural line of cleavage within the region as a whole. Thus, warfare, the killing of one’s fellow human beings, became an option in the range of responses of the Anasazi only after the cultural homogeneity had broken down and diverse ethnic or tribal groups had appeared.

Returning to the archaeological record of the Anasazi, a complex set of environmental and demographic conditions led to warfare initially in the 13th century. Then at the end of that century, three things happened. First, the heartland of the Anasazi was abandoned, with some of the people moving south and others east into the Rio Grande Valley of New Mexico. Second, the conditions of environmental stress began to ease. The cycle of droughts ended and the pattern of soil erosion shifted to one of gradual soil aggradation. Finally, the pattern of endemic warfare that emerged in the Anasazi

Upper right: The steep rock “staircase” that provided the only access route into a large village complex of more than 200 rooms. This site, called the Organ Rock Ruin, is located atop the steep mesa shown at lower right on this page.

Center left: The Southwest today is in a cycle similar to that of the 13th century, with most annual precipitation coming in the form of heavy summer thundershowers. While beautiful, these storms do not allow the water to seep deep into the earth and serve only to increase erosion



of the soil.

Bottom right: Hard to conceive, but there was a significant prehistoric settlement atop this steep mesa. The Organ Rock Ruin, dating from A.D. 1250 to 1300, is one of the highly defensive sites built during this period of regional conflict.

Page 11, bottom left: Informally called Terrace House, this cliff dwelling perched high up in one of the caves of Tsegi Canyon is a stark reminder of the extraordinary lengths to which the Kayenta people went to defend their families and resources.



heartland changed as the emigrants moved out into other areas. It did not stop completely, but it decreased significantly and cycled up and down at a subregional level.

In the Rio Grande Valley of New Mexico, where it appears some substantial portion of the emigrants settled, there are indications of highly defensive site locations for the first half of the 14th century. But the Rio Grande Valley represented a rich new resource zone at least in the initial years of heavy immigration from the west, with ample land and water. There are few signs of malnutrition. While there was certainly great ethnic diversity in the Rio Grande Valley, the primary causes of warfare were removed from the adaptive equation. Without the environmental pressures stimulating raiding and fighting, peace was a more adaptive option for the people in the valley. The level of conflict thus greatly abated in the 14th century as the people moved down off the hilltops; signs of violence occur only sporadically.

The long historical perspective of archaeology gives another kind of insight into cross-cultural patterns of warfare. We see from the data in the Southwest that tribal people cycle both in and out of endemic patterns of conflict. Warfare is not inevitable, even among ethnically diverse groups. Groups that are at war in one era or generation may well be at peace in the next. Without the long-term view of the archaeological record, this pattern is difficult to see ethnographically. Groups known as being peaceful, such as the Xingu of Brazil, the Semai of Malaysia, or the Pueblos of northern New Mexico may be at one point in the cycle, while others known for raiding and fighting, such as the Yanomamo of Brazil, the Nuer of East Africa, and the Iban of Malaysia are at another point. Archaeology shows that warfare in tribal groups must be viewed in historical context. As the pressures leading to warfare abate so too does the warfare.

Increased prevalence of war

While archaeology helps highlight the cyclical nature of warfare among tribal peoples, it also helps show that the warfare loop of the cycle has been increasingly dominant as one moves closer in time to the present. Ten thousand years ago, there is almost no evidence for warfare anywhere on earth. Then, as the



WESTERN TECHNOLOGY IN CHINA

QING DYNASTY CARVED GLASS VASES

By Chuimei Ho
Department of Anthropology

Before the 19th century, one of the few aspects of Western science to have been genuinely admired in the East — along with ship-building, cannon-casting, and astronomy — was the technology of glass making.

Both blown and molded types of glass were made in China at least several centuries before the Christian era, often by private craftsmen not under royal patronage. The craft, however, remained underdeveloped and even may have disappeared from time to time. Early glass workers seem to have made only small decorative items — beads, hairpins, pendants, rings, and sometimes perfume-type bottles. They also had few color choices: smudgy clear, blue, greenish blue, and opaque white.

A breakthrough came about 1700 when Emperor Kangxi (1664-1722) set up a glasshouse with Bernard Kilian Stumpf, a German missionary, helping to build the furnace. Only then could large glass objects be made: vases, plates, bowls, and teacups as well as snuff bottles. Quality still seems to have been a problem, however. In 1756 Emperor Qianlong (1736-1796) was so annoyed with the inferiority of certain officially commissioned glass bowls made in Canton that he forbade payment to the craftsmen.

Two vases recently donated to the Field Museum show that progress was nonetheless being made in this period, particularly in the area of carved glass decoration. Part of the inspiration may have come from Qianlong's technical consultant, the French Jesuit Gabriel-Leonard de Broussard, a trained glass specialist who served in the Imperial Glasshouse between 1742 and 1756.

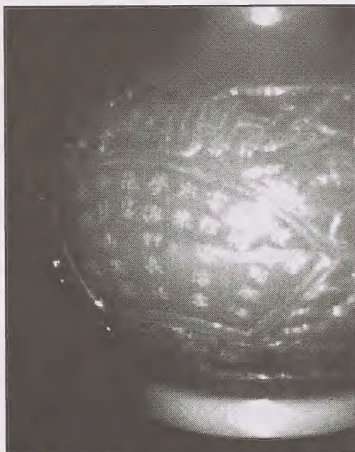
Glass in the Qianlong period improved so markedly that objects from the Imperial Glasshouse often formed part of official gifts to governments of other countries, including France. The impact of glass went beyond the palace and was felt even in private industry. By the time of the late 18th century, one reads from trading inventories that Chinese glass candlesticks were good enough for exporting to Japan, another Asian country where glass-making traditions were old but not strong. By the

mid-19th century, Chinese glass beads had even found markets in North America — at least some of the beads used by Indians in Alaska, British Columbia, and even California are thought to have come from China.

The Museum's new glass vases have the translucent yellow color associated with wares made for imperial use, and are of outstanding quality. They are a matched pair in a simple but classical shape — a plain long neck and a round body with rich carved decoration. They are heavy, with walls as thick as 1.1 cm. The vases were first blown to shape, then part of the surface was cut away leaving the designs in relief.

The vases, completed in 1747, appear to be too classically Chinese in sentiment for Father de Broussard to have been directly involved — the designs come from conventional Chinese decorative art, and the technique of low relief carving in hard materials comes from traditional jade and stone work. But de Broussard is known to have been trying to produce glass objects that were exceptionally difficult in execution. It is conceivable he oversaw the manufacturing process while the actual labor was done by experienced glass workers from Guangdong or Shandong provinces.

There are few precisely dated examples of Chinese glass from Qianlong's 60-year reign, and these vases are the earliest known. They were donated to the Museum by the daughters of the late Mr. and Mrs. Abba Lipman, who were long-time Chicago residents. Two of the daughters, Mrs. Dodie Baumgarten and Mrs. Barbara Kent, are members of the Collections Committee, the Museum's recently organized support group interested in ethnographic and historical artifacts.



Cat. No. 259808 (detail)

As these photos demonstrate, the best 18th-century Chinese glass carving is variable in depth, creating rounded design elements. Most of the work was refined by hand; later examples tend to be mechanical, cut with wheels so that the rigid relief is shown in a single level.

The body of each vase has four panels, two circular and two fan-shaped. Surrounding the panels are intertwined bands and stylized lotus scrolls of the type called "foreign lotus" in China. These traditional design motifs and the conventional vessel shape indicate that the vases were probably meant for solemn occasions where a conservative feeling and exquisite workmanship would be appropriate.

The engraved poems within the panels also deserve attention. Qianlong was perhaps the most productive writer among all rulers in world history — he published nearly 10,000 poems. For these vases, where all the poems are about time and solitary feelings, we know that Qianlong selected at least one 9th-century verse for engraving along with several of his own.



Cat. No. 259809 (detail)



Cat. No. 259809

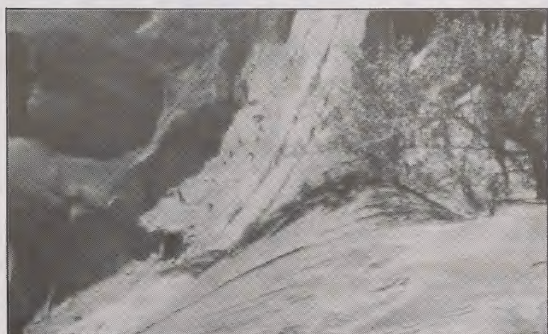
WAR...

world's population grew to fill in available niches, states evolved and spread, and warfare appeared in the evolutionary trajectories of an increasing number of societies around the world. Furthermore, at least in the world areas with which I am familiar, the frequency of warfare escalates over time. Five-hundred- or thousand-year cycles shorten to fifty- or one-hun-

dred-year cycles.

This pattern does not necessarily indicate that people in the modern age are somehow more inherently violent and culturally prone to warfare. Rather, the causes of warfare have become more prevalent. There is no relief for population pressure, and the sources of economic and environmental stress are unrelenting.

Archaeology can be used to study the origins and development of patterns of conflict in prehistoric times, and it offers some hope that such conflict need not be accepted as an inevitable concomitant of ethnic diversity and cultural evolution.





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